

## CAPTAINS' TRAINING AT SWISSAIR

Capt. N. Grob\*

In the following short lecture I should like firstly, to comment on some of the limitations as regards pilots, within which our Airline has to operate, and secondly, to examine the objectives, crucial points and problems of the individual phases of the captain's basic training. What I have to say completes and emphasizes the essential points mentioned in the Working Paper submitted by Capt. Grünwald, our Flight Training Manager (see appendix B).

We all have the same target: we want to train copilots to become captains, captains to whom we can entrust, with a clear conscience, passengers and material of immense value. Each airline, however, has to a greater or lesser extent, *different prerequisites*. Already in the selection, for example, the requirements vary considerably. Not only the intellectual but also the flying capabilities are very different. One company may only recruit Air Force pilots; others prefer ab initio applicants. On the one hand a matriculation may be demanded; on the other a relatively lower standard of education is sufficient. Also varying considerably are the systems of promotion, the demands and pressures from the unions. And certainly the various flight training departments are also subject to varying economic pressures exerted on them by their managements.

With this, I must say that I don't expect to receive a gold medal for Swissair's methods, but rather to offer a solution, based on experience, that functions well essentially as far as our marginal requirements are concerned.

These can be described as follows. We recruit yearly about 40 pilots, of whom one third are from the Air Force and two thirds ab initio applicants. The average age is about 25 years. At present, after basic training, they fly about 12 years as copilot. As regards assignment to aircraft type, the management has a free hand where copilots are concerned. Usually for the first 5 to 6 years, copilots fly the short-range DC-9, after which for about 6 years they change to one of the long-range aircraft types — DC-8, DC-10, or -747 (fig. 1). Then follows a retraining period on the DC-9, a 2-month assignment as DC-9 copilot, and finally comes the long awaited initial upgrading to captain. The captain's career is in 3 steps: captain of a DC-9, captain of a DC-8, and captain of a DC-10 or -747.

Wherein lies the exact *problem in the captain's training*? In my opinion, the main aim is to further the ability of the pilot to recognize clearly situations that require him to make decisions and to make those decisions in good time, with the best means available. This we can define as *management*. Prerequisites are *knowledge and flying ability*.

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For a long time we only concentrated on these two lines. In actual fact, it started originally only with flying ability — localized in the extension of the spine! Nowadays, Swissair bases its captain's training on three points:

1. *Theoretical knowledge* has taken on immense proportions in the fields of aerodynamics, performance, aircraft systems, regulations, and so on.

2. *Flying skill or ability* is still demanded to a high degree; it is not yet replaced by progressive automation. For the next few years, we shall still be living in this demanding interim phase. A pilot must be capable, on the one hand, of being a back-up system for normal operations and primary system for abnormal operations; on the other hand, he must act as programmer and supervisor of the automatic systems. Both areas, manual flying as well as automatic flying, must still be demanded in their entirety.

3. *Management*, that is the ability (1) to recognize situations and problems in good time, (2) to analyze, and (3) to find the best possible solution.

A high failure rate in the early 1970's forced us to introduce two innovations (fig. 2):

1. For one morning, approximately 1 year before the captain's course begins, all aspirants from the same age group are briefed as to the objectives, course structure and organization, and the problems and possibilities of preparation by the flight training manager, the DC-9 chief pilot, and myself.

The mental preparation and motivation toward a higher personal commitment are essential. A cold engine doesn't take kindly to a quick change from idle into top gear!

2. Whereas earlier the transition from long-range to short-range aircraft was combined with the captain's course, we have now made a definite separation. The pilot is consequently not so overtaxed. He completes the transition course as copilot, under less stress, and for 2 months has the opportunity to familiarize himself with the new equipment, the new route structure, and the new rhythm of short-range operations. The well known so-called "slow starters" now have a better chance.

In addition, we have the opportunity, in such cases where weaknesses are observed in the transition course, to extend the period as copilot by a few weeks, or even months, thereby also reducing the risk of failures. We still come across the occasional case each year, however.

And now comes the big hurdle.

*The Captain's Course (CC).* On the average, we train 24 new captains each year, of whom 3 to 4, or about 15 percent, fail to pass this part of the

training. For humanitarian and economical reasons, this figure is still too high and we are not satisfied with the result. Studies of each individual case make it essential that our selection, teaching methods, and aids are continually examined and improved. These unsuccessful pilots continue for at least one year as DC-9 copilots before getting a second chance. Half pass at the second attempt; for the others, the alternative is to remain as long-range copilot.

After several negative results, we have abandoned the procedure of giving a third chance, because only more damage is done. Little hope and a minimum of self-confidence are destroyed completely — the process borders on torture!

The *reasons for failure* are mostly an accumulation of poor flying aptitudes, mental inflexibility, and meager leadership qualities. In some cases, performance was definitely shadowed by private problems. We have to accept the fact that a pilot's progress cannot be forecast exactly during the selection, and that in the course of time as copilot, outside influences are at work over which we have no control. The long copilot period is in itself a problem and could quite well provide a topic for such a workshop.

The *objective* of the captain's course is clearly recognizable. The aspirant must understand the normal and abnormal flight procedures and be able to apply them in the simulator and in the aircraft. Compared to the demands made of the copilot, we add (1) engine failure in all phases, and (2) approaches and landings with abnormal configurations (0-flaps, slats, etc.).

The captain's course comprises the following (table 1):

1. One day (6 hours) theory flight procedures, which comes under the heading of knowledge
2. Five sessions (9 hours at the controls) simulator and flying skills
3. Three sessions (4 to 5 hours) flight training and flying skills
4. Three sessions (10 hours) simulator and management

In the *flight training*, we concentrate for the most part on VMC circuit work, which is still required for a few poorly equipped airports. As the overall majority of our destinations offer navigational luxury, the training opportunities for low circuits are small. In this respect, Air Force pilots have more experience compared with ab initio pilots.

Now that the individual bricks are provided, it is up to the would-be captain, as a last step, to assemble them and make a building. He must deal with various realistic trouble situations independently, right up to the landing.

The focal point is management. Here the prospective captain must not be the soloist but rather the conductor, making the optimal use of his orchestra to build up a harmony, using his knowledge and skill, his copilot (we have a two-man concept) and the assistance of ATC, dispatcher, etc.

Thereupon the chief pilot takes over. In a 5-day theory course, the so-called *Captain's Theory Course I* (fig. 2), we want to introduce our future manager into the domain of the large-scale enterprise of Swissair, at the same time going into the details of the captain's *rightful position*.

Captains are in a sense isolated, as a result of the nature of their work. Ground personnel, being stationed in one place, generally feel themselves more integrated into the company as a whole. Together with 400 captains, there are about 15,000 employees pulling on the same string. All want to carry a large number of satisfied passengers safely over our route network. There is an enormous profit to be gained from a good cooperation between all departments, but this depends entirely on understanding the problems and opportunities of the others — above all, mutual respect. The captain, in his work, comes into either direct or indirect contact with practically all departments connected with the airline business.

We strive for a close coordination and cooperation by getting to know, above all, the direct contact officers, such as dispatch, crew coordinator, ATC, station manager, and so on — but not forgetting those who remain rather more in the background. The managers of the various departments appear personally as speakers. Although under pressure of work, they accept this duty willingly.

These efforts bring real rewards and the results of a harmonious integration of flight personnel can be easily recognized as a sound motivation and healthy working atmosphere as a whole.

And now we throw the aspirants into the pool, with the swimming teacher standing watch. For about 150 hours, we train the would-be captains *in practice*. This phase we call *upgrading* (fig. 2). During the first 70 hours, the aspirant sits in the left seat with the route instructor taking the place of the copilot in the right-hand seat, the regular copilot occupying the observer seat. At the end of the 70 hours, the route instructor changes places with the copilot, allowing the captain and copilot to work together as a normal cockpit team. During the first phase, some aspirants occasionally have difficulties playing the role of boss, in the presence of the experienced route instructor.

The upgrading is made up of three phases (fig. 3):

1. In the *Introduction Phase*, mistakes are by all means accepted, as long as safety is not affected.

2. In the *Second Phase*, the qualities of leadership, crew supervision, initiative, powers of decision, and cooperation with other departments come more to the front.

3. In the *Final Phase*, we want to make sure that the prospective captain is now in the position, as pilot as well as manager, to master his job and prove his capabilities regularly.

In the upgrading, we seldom have failures. Each aspirant flies with approximately eight *route instructors*. Each day the mistakes are discussed with the aspirant, personal experiences imparted and, by means of a syllabus, knowledge of the flight operations manual, aircraft systems, performance and flight procedures are explained and checked. Each route instructor issues a qualification.

As a result, the chief pilot can assess the progress of his pupils and can take immediate action and the necessary measures, for each case individually, should any difficulties arise.

Our system demands much adaptability on the part of our would-be captains: adaptation to different viewpoints, personalities, and temperaments. Differences, however, have the big advantage in that they provoke discussion and the analysis of a problem. Not only that, but the route instructors, and finally the management of flight operations, are forced to continually reflect on the basic points.

Out of a total complement of 200 DC-9 captains, we have 50 route instructors who are in direct contact with the chief pilot. Every 2 months each route instructor calls a 1-day meeting, at which general information is exchanged and problem cases and questions discussed. We try continually, using examples, to come to a unanimous assessment of the aspirant concerned.

These route instructor meetings give us, in every respect, a clear insight into the working atmosphere, the worries and needs of our crews; we can obtain valuable information from them.

The captain's appointment is celebrated with a dinner, at which a representative of the top management, usually the President himself, is present. The wives are also invited to this celebration. Shortly after the appointment, all the new captains are invited once more to a secluded center in the Swiss Alps. Using examples of some of the problems in line operations — with cabin personnel, passengers, station and hotel personnel, etc. — we work out management principles for the captain, in group discussions.

We place this course at the end of the training (fig. 2), and after the appointment as captain, because with the participation of people who are no longer under duress, and who can introduce problem situations which they themselves have experienced, we can achieve an essentially greater success. This final 3-day course is conducted by the DC-9 chief pilot.

To conclude, allow me to make a few statements, which I hope will act as stimulation for the working group activities that start tomorrow.

It is *no problem* to train our copilots to become enthusiastic, well-motivated, and qualitatively excellent captains. Subsequently, however, forces are at work over which we have no power of control. Insufficient challenge in daily routine; the changing role of the pilot; the sinking image of the profession in the eyes of society; the effects of top salaries for a minimum of creativity and having a say in matters; the changing social and family structures and the resultant increasing personal problems are just a few of the animating keywords.

The main problem lies in *maintaining the standard* of our young first-rate captains until their retirement.

#### DISCUSSION

DR. LAUBER: Are there questions of Capt. Grob?

CAPT. JOHANNESSEN, Scandinavian Airlines: Did you say every month, a few days with the route instructor?

CAPT. GROB: No, every two months a 1-day meeting.

CAPT. FRINK, Pan Am: Did I understand that the president of your company personally greets each new captain?

CAPT. GROB: Right.

CAPT. FRINK: That's wonderful.

CAPT. GROB: We take them all together, about 12. We have the celebration twice a year, and then the president will be present for that celebration.

JOAN BARRIAGE, FAA: Would you comment on what type of training you have for the training captains with respect to resource management? Your captains are imparting to your new captains a concept of how they manage in the cockpit — I was wondering what principles or what background might be common to all of your training captains in regard to this particular aspect of training?

CAPT. GROB: Our training captains are trained in a course. That course takes about 5 to 6 days and there all the principles are discussed. And also these route instructor meetings are for that purpose — to standardize procedures and to find the "unité de doctrine." Does that answer your question?

JOAN BARRIAGE: I understand then that it is through this joint meeting of these individuals that, shall we say, a common approach evolves in dealing then with the whole range of anticipated problems in the cockpit?

CAPT. GROB: Yes.

CAPT. FRISTOE, United Airlines: In connection with the flying skills, you stated you had five sessions in the simulator and three sessions of in-flight training. Would you briefly describe what each one of these days involves? What is the length of training involved, and so on?

CAPT. GROB: Yes. You mean this here?

CAPT. FRISTOE: Yes. It says you have five sessions over a period of five days; that would be one session a day, is that correct?

CAPT. GROB: That's right, every day a session.

CAPT. FRISTOE: What is the length of that day and what does the session basically involve?

CAPT. GROB: A session takes about 3 hours in the simulator and then comes the briefing time. And we go through all the flight procedures, all normal and abnormal procedures. So we build the brick here, we form the bricks. That's the reason for these sessions. In the flight training we can't go through all the flight procedures, we just select a few of them. I'd say mainly the VMC part, which can't be simulated completely in the simulator, and also the landings with abnormal configurations, are done during the flight training. And these 3 days and three sessions here, (post flight simulator) we have different problems, situations which the new captain has to deal with. That's where we teach him to assess the situation, analyse the situation, and to manage his resources. We had just two cases in the last 2 months where we could see that there was quite a problem and quite a bit of progress to be made, and we think that we will extend these 3 sessions here. Here the captain can learn something really new — something that they have to know for their future job.

MR. COEN, FAA: Capt. Grob, is that what we're calling LOFT, that last three sessions?

CAPT. GROB: Yes, right, that's the same.

MR. MANSFIELD, American Airlines: That being the case, with the new captain, there will be qualified line crewmembers in the other two seats, in the case of the three-member airplane?

CAPT. GROB: Yes.

MR. MANSFIELD: Are they undergoing some kind of training or just there to support?

CAPT. GROB: Just there to support.

CAPT. GILSTRAP, United Airlines: You mentioned the reasons for failure. Lack of pilot aptitude, I think was one, and the third one was a lack of leadership qualities. What was the second one in between those two?

CAPT. GROB: Yes, it is the lack of flexibility.

CAPT. GILSTRAP: Could you expand on any of these three, in any way, as to what you see there in the way of failures?

CAPT. GROB: Well, we thought a lot about how we could reduce this number of failures, of course. I'm not sure if we should invest more time. We have quite a big program, I think, compared with the programs you have here in the United States. We will give training as long as we can see an improvement. However, very often the improvement stops, and then it doesn't make any sense to go on further. So our way is to say, "then we stop here, and we start again in 1 year."

DR. LAUBER: Capt. Grob, thank you very much.

TABLE 1.- CAPTAINS COURSE

- THEORY – FLIGHT PROCEDURES – 1 DAY – KNOWLEDGE
- SIMULATOR – 5 SESSIONS – 5 DAYS – FLYING ABILITY
- FLIGHT TRAINING – 3 SESSIONS – 3 DAYS – FLYING ABILITY
- SIMULATOR – 3 SESSIONS – 3 DAYS – MANAGEMENT

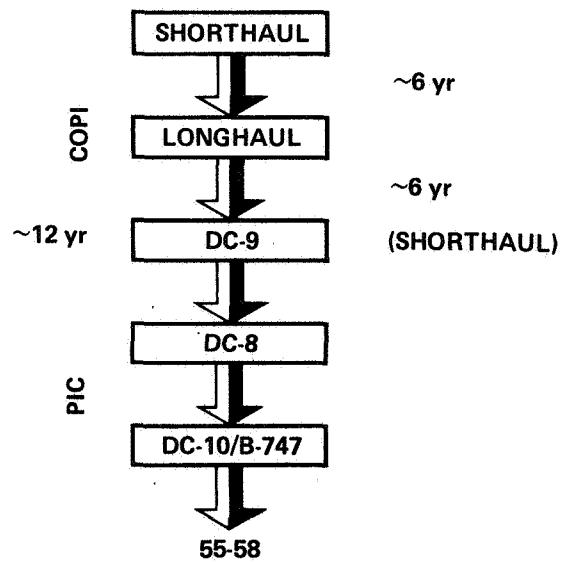


Figure 1.- Pilot career progression.

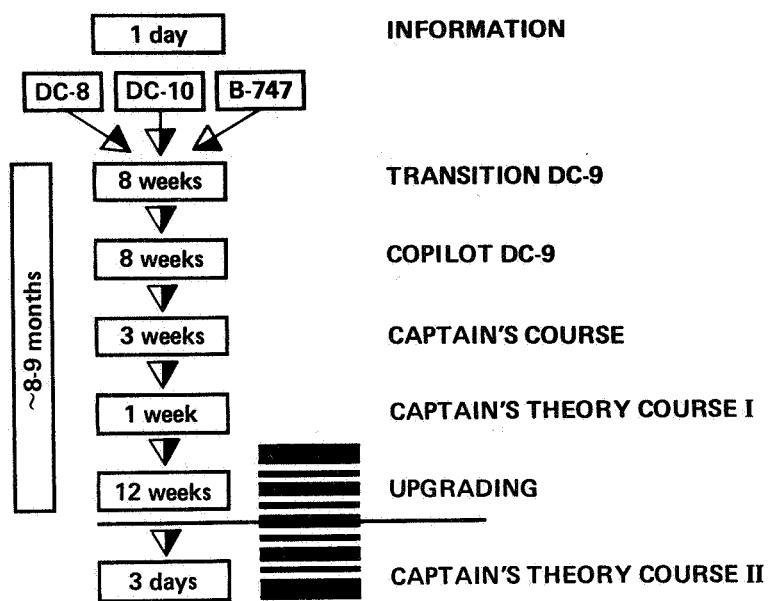


Figure 2.- Course program.

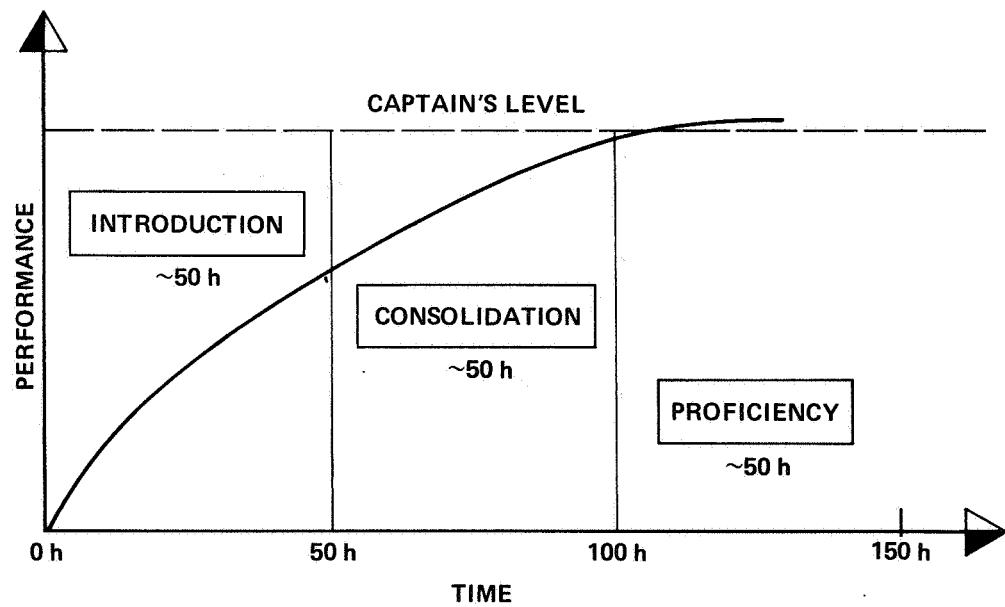


Figure 3.- Initial upgrading.